

DOCKET NO.: N0410.70000US00

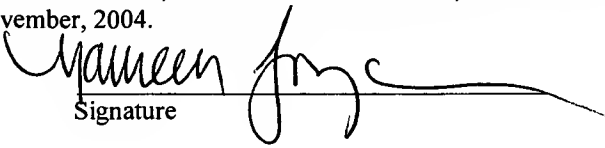
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Lawrence F. Hancock et al.  
Serial No.: 09/997,999  
Confirmation No.: 3909  
Filed: November 30, 2001  
For: LUMINESCENT POLYMER PARTICLES

Examiner: Edward J. Cain  
Art Unit: 1714

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)

The undersigned hereby certifies that this document is being placed in the United States mail with first-class postage attached, addressed to MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the 12 day of November, 2004.

  
Signature

MAIL STOP AMENDMENT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

STATEMENT FILED PURSUANT TO THE DUTY OF  
DISCLOSURE UNDER 37 C.F.R. §§1.56, 1.97 AND 1.98

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§1.56, 1.97 and 1.98, the Applicants request consideration of this Information Disclosure Statement.

PART I: Compliance with 37 C.F.R. §1.97

This Information Disclosure Statement has been filed more than three months after the filing date of this application and after the mailing date of the first Office Action, but before the mailing date of either a final action under 37 C.F.R. §1.113 or a Notice of Allowance under 37 C.F.R. §1.311, or an action that otherwise closes prosecution in this application.

The fee of \$180 as set forth in 37 C.F.R. §1.17(p) is enclosed.

PART II: Information Cited

The Applicants hereby make of record in the above-identified application the information listed on the attached form PTO-1449 (modified). The order of presentation of the references should not be construed as an indication of the importance of the references.

The Applicants hereby make the following additional information of record in the above-identified application.

1) The Applicants would like to bring to the Examiner's attention the following co-pending applications that may contain subject matter related to this application:

| <u>Serial No.</u> | <u>Filing Date</u> | <u>Inventor(s)</u> |
|-------------------|--------------------|--------------------|
| 10/325,660        | 12-19-2002         | Deans et al.       |

2) The Applicants would like to bring to the Examiner's attention the enclosed International Search Report from a corresponding International Application Serial No. PCT/US02/38321 (published as International Publication No. WO 2003/048226), issued by the ISA on December 12, 2003.

PART III: Explanation of Non-English Language References and Remarks Concerning Other Information Cited

The following is a concise explanation of the relevance of each non-English language reference listed on the attached form PTO-1449 (modified). The Applicants are not in possession of any English language translations of the enclosed non-English language references.

The relevance of DE 198 06 037 A 1 is indicated in the enclosed International Search Report from a corresponding International Application Serial No. PCT/US02/38321.

The relevance of DE 197 44 792 A 1 is indicated by the chemical structures and formulae disclosed throughout the document.

PART IV: Remarks

Documents cited anywhere in the Information Disclosure Statement are enclosed unless otherwise indicated. It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims;
2. The enclosed form PTO-1449 be signed by the Examiner to evidence that the cited information has been fully considered by the Patent and Trademark Office during the examination of this application;
3. The citations for the information be printed on any patent which issues from this application.

By submitting this Information Disclosure Statement, the Applicants make no representation that a search has been performed, of the extent of any search performed, or that more relevant information does not exist.

By submitting this Information Disclosure Statement, the Applicants make no representation that the information cited in the Statement is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56(b).

By submitting this Information Disclosure Statement, the Applicants make no representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. §102.

Notwithstanding any statements by the Applicants, the Examiner is urged to form his own conclusion regarding the relevance of the cited information.

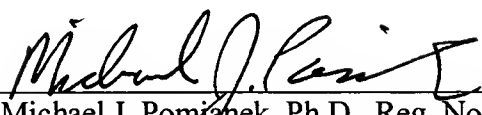
An early and favorable action is hereby requested.

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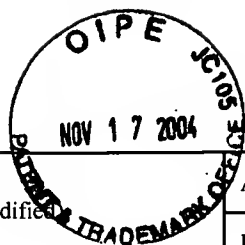
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Art Unit: 1714

Respectfully submitted,

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Date: November 12, 2004  
**xNDDx**  
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FORM PTO-1449/A and B (Modified)

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

APPLICATION NO.: 09/997,999

ATTY. DOCKET NO.: N0410.70000US00

FILING DATE: November 30, 2001

CONFIRMATION NO.: 3909

APPLICANT: Lawrence F. Hancock et al.

GROUP ART UNIT: 1714

EXAMINER: Edward J. Cain

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**U.S. PATENT DOCUMENTS**

| Examiner's<br>Initials | Cite<br>No. | U.S. Patent Document |              | Name of Patentee or Applicant of Cited<br>Document | Date of Publication or of issue<br>of Cited Document<br>MM-DD-YYYY |
|------------------------|-------------|----------------------|--------------|--|--|
|                        |             | Number               | Kind<br>Code |  |  |
|                        |             | 5,869,592            |              | Gagne et al.                                       | 02/09/1999   |
|                        |             | 5,925,517            |              | Tyagi et al.                                       | 07/20/1999   |
|                        |             | 6,020,426            |              | Yamaguchi et al.                                   | 02/01/2000   |
|                        |             | 6,783,814            | B2           | Swager, et al.                                     | 08/31/2004   |
|                        |             | US 2002/0040805      | A1           | Swager   | 04/11/2002   |
|                        |             | US 2002/0150697      | A1           | Swager et al.                                      | 10/17/2002   |
|                        |             | US 2003/0134959      | A1           | Hancock et al.                                     | 07/17/2003   |
|                        |             | US 2003/0178607      | A1           | Swager et al.                                      | 09/25/2003   |
|                        |             | US 2004/0043251      | A1           | Epstein et al.                                     | 03/04/2004   |
|                        |             | US 2004/0121337      | A1           | Deans et al.                                       | 06/24/2004   |

**FOREIGN PATENT DOCUMENTS**

| Examiner's<br>Initials | Cite<br>No. | Foreign Patent Document |             |              | Name of Patentee or Applicant of Cited<br>Document<br>(not necessary) | Date of<br>Publication of<br>Cited Document<br>MM/DD/YYYY | Translation<br>(Y/N) |
|------------------------|-------------|-------------------------|-------------|--------------|---|---|----------------------|
|                        |             | Office/<br>Country      | Number      | Kind<br>Code |   |   |                      |
|                        |             | DE                      | 197 44 792  | A1           | Hoechst AG  | 04/15/1999  | N                    |
|                        |             | DE                      | 198 06 037  | A1           | Aventis Research & Technologies GmbH                                  | 08/19/1999  | N                    |
|                        |             | EP                      | 1 011 154   | A1           | Sony International (Europe) GmbH                                      | 06/21/2000  |                      |
|                        |             | WO                      | 89/00593    |              | Memtec Limited  | 01/26/1989  |                      |
|                        |             | WO                      | 01/57140    | A1           | Massachusetts Institute of Technology                                 | 08/09/2001  |                      |
|                        |             | WO                      | 02/16463    | A2           | Massachusetts Institute of Technology                                 | 02/28/2002  |                      |
|                        |             | WO                      | 03/048226   | A2           | Nomadics, Inc.  | 06/12/2003  |                      |
|                        |             | WO                      | 2004/057014 | A2           | Nomadics, Inc.  | 07/08/2004  |                      |

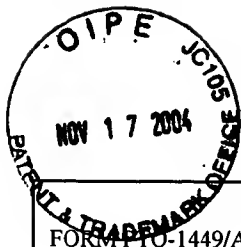
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\*a copy of this reference is not provided as it was previously cited by or submitted to the office in a prior application, Serial No. \_\_, filed \_\_, and relied upon for an earlier filing date under 35 U.S.C. 120 (continuation, continuation-in-part, and divisional applications).

[NOTE - The Office hereby waives the requirement under 37 CFR 1.98 (a)(2)(i) for submitting a copy of each cited U.S. patent and each U.S. patent application publication for all U.S. national patent applications filed after June 30, 2003 and for all international applications that have entered the national stage under 35 USC 371 after June 30, 2003. See 37 CFR 1.491(b). For all patent applications filed on or before June 30, 2003, copies of cited U.S. patents and patent application publications are still required unless an eIDS is filed. Copies of all other patent(s), publication(s), or other information listed must still be provided, even if it was previously submitted to, or cited by, the U.S. Patent Office in an earlier application, unless the earlier application is identified by the IDS and is relied upon for an earlier filing date under 35 U.S.C. §120, and the copy was provided in the earlier application.]



|   |   |                                       |                                   |
|---|---|---------------------------------------|-----------------------------------|
| <b>FORM PTO-1449/A and B (Modified)</b><br><br><b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b> |   | APPLICATION NO.: 09/997,999           | ATTY. DOCKET NO.: N0410.70000US00 |
|   |   | FILING DATE: November 30, 2001        | CONFIRMATION NO.: 3909            |
|   |   | APPLICANT: Lawrence F. Hancock et al. |                                   |
|   |   | GROUP ART UNIT: 1714                  | EXAMINER: Edward J. Cain          |
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**OTHER ART — NON PATENT LITERATURE DOCUMENTS**

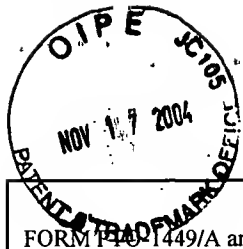
| Examiner's<br>Initials | Cite<br>No | Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published. | Translation<br>(Y/N) |
|------------------------|------------|---|----------------------|
|                        |            | Brabec, C. et al., "Plastic Solar Cells," <i>Adv. Funct. Mater.</i> , Feb. 2001 11:15-26, Wiley-VCH GmbH, Germany   |                      |
|                        |            | Cotts, P. et al., "Equilibrium Flexibility of a Rigid Linear Conjugated Polymer," <i>Macromolecules</i> , 1996 29:7323-7328, Amer. Chem. Soc.   |                      |
|                        |            | Chemical & Engineering News, "A Better Sensor for Nerve Gas," March 10, 2003, p. 12.  |                      |
|                        |            | Deans, R. et al., "A Poly(p-phenyleneethynylene) with a Highly Emissive Aggregated Phase," <i>J. Am. Chem. Soc.</i> , 2000 122:8565-8566, Amer. Chem. Soc.  |                      |
|                        |            | Fiesel R. et al., "Aggregation-induced CD effects in chiral poly(2,5-dialkoxy-1,4-phenylene)s," <i>Acta Polym.</i> , 1998 49:445-449, Wiley-VCH Verlag GmbH, Germany  |                      |
|                        |            | Fiesel, R. et al., "A chiral poly(para-phenyleneethynylene) (PPE) derivative," <i>Macromol. Rapid Commun.</i> , 1998 19:427-431, Wiley-VCH Verlag GmbH, Germany   |                      |
|                        |            | Fiesel, R. et al., "On the Solid State Aggregation of Chiral Substituted Poly(para-phenylene)s(PPPs)," <i>Synthetic Metals</i> , 1999 102:1457-1458, Elsevier Science S.A.  |                      |
|                        |            | Goldfinger, et al., "Fused Polycyclic Aromatics via Electrophile-Induced Cyclization Reactions: Applications to the Synthesis of Graphite Ribbons," <i>J. Am. Chem. Soc.</i> , 1994 116:7895-7896, Amer. Chem. Soc.   |                      |
|                        |            | S. Hoger et al., "Synthesis, Aggregation, and Adsorption Phenomena of Shape-Persistent Macrocycles with Extraannular Polyalkyl Substituents," <i>J. Am. Chem. Soc.</i> , 2001 123:5651-5659, American Chemical Society  |                      |
|                        |            | Kim J. et al., "Ion-Specific Aggregation in Conjugated Polymers: Highly Sensitive and Selective Fluorescent Ion Chemosensors," <i>Angew. Chem. Int. Ed.</i> , 2000 39:3868-3872, Wiley-VCH Verlag GmbH, Germany   |                      |
|                        |            | Kim, J. et al., "Control of conformational and interpolymer effects in conjugated polymers," <i>Nature</i> , June 2001 411:1030-1034, Macmillan Magazines Ltd.  |                      |
|                        |            | Kim, J. et al., "Directing Energy Transfer within Conjugated Polymer Thin Films," <i>J. Am. Chem. Soc.</i> , 2001 123:11488-11489, American Chemical Society  |                      |
|                        |            | Kim, J. et al., "Structural Control in Thin Layers of Poly(p-phenyleneethynylene)s: Photophysical Studies of Langmuir and Langmuir-Blodgett Films," <i>JACS Articles</i> , 2002 124:7710-7718, American Chemical Society  |                      |
|                        |            | Kohler, B. et al., "Novel Chiral Macrocycles Containing Two Electronically Interacting Arylene Chromophores," <i>Chem. Eur. J.</i> , 2001 7:3000-3004, Wiley-VCH Verlag GmbH, Germany   |                      |

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| Sheet   | 3 | of                                    | 3                                 |

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|--|--|--|--|--|
|  |  | Langeveld-Voss, B.M.W. et al., "Circular Dichroism and Circular Polarization of Photoluminescence of Highly Ordered Poly {3,4-di[(S)-2-methylbutoxy]thiophene}," <i>J. Am. Chem. Soc.</i> , 1996 <b>118</b> :4908-4909, American Chemical Society                        |  |  |
|  |  | Levitsky, I.A. et al., "Mass and Energy Transport in Conjugated Polymer Langmuir-Blodgett Films: Conductivity, Fluorescence, and UV-Vis Studies," <i>Macromolecules</i> , 2001 <b>34</b> :2315-2319, American Chemical Society   |  |  |
|  |  | McQuade, D.T. et al., "Conjugated Polymer-Based Chemical Sensors," <i>Chem. Rev.</i> , 2000 <b>100</b> :2537-2574, American Chemical Society   |  |  |
|  |  | McQuade, D.T. et al., "Two-Dimensional Conjugated Polymer Assemblies: Interchain Spacing for Control of Photophysics," <i>J. Am. Chem. Soc.</i> , 2000 <b>122</b> :5885-5886, American Chemical Society  |  |  |
|  |  | Mitschke, U. et al., "The electroluminescence of organic materials," <i>J. Mater. Chem.</i> , 2000 <b>10</b> :1471-1507, The Royal Society of Chemistry  |  |  |
|  |  | Moon, J.H. et al., "Capture and detection of a quencher labeled oligonucleotide by poly(phenylene ethylene) particles," <i>Chem. Commun.</i> , 2003 104-105, Royal Society of Chemistry  |  |  |
|  |  | Norvez S. et al., "Epitaxylens: mesomorphic properties of triptycene derivatives," <i>Liquid Crystals</i> , May 1993 <b>14</b> :1389-1395, Taylor & Francis Ltd.   |  |  |
|  |  | Oda M. et al., "Circularly-Polarized Electroluminescence from Liquid-Crystalline Chiral Polyfluorenes," <i>Adv. Mater.</i> , 2000 <b>12</b> :362-365, Wiley-VCH Verlag GmbH, Germany   |  |  |
|  |  | Oda M. et al., "Chiroptical properties of chiral-substituted polyfluorenes," <i>Synthetic Materials</i> , 2000 <b>111-112</b> :575-577, Elsevier Science S.A.  |  |  |
|  |  | Peeters, E. et al., "Circularly-Polarized Electroluminescence from a Polymer Light-Emitting Diode," <i>J. Am. Chem. Soc.</i> , 1997 <b>119</b> :9909-9910, American Chemical Society   |  |  |
|  |  | Yang, J. et al., "Porous Shape Persistent Fluorescent Polymer Films: An Approach to TNT Sensory Materials," <i>J. Am. Chem. Soc.</i> , 1998 <b>120</b> :5321-5322, American Chemical Society   |  |  |
|  |  | Yang, J. et al., "Anomalous crystal packing of iptycene secondary diamides leading to novel chain and channel networks," <i>Tetrahedron Letters</i> , 2000 <b>41</b> :7911-7915, Elsevier Science Ltd.   |  |  |
|  |  | Zhang, S. et al., "Fluorescent Detection of Chemical Warfare Agents: Functional Group Specific Ratiometric Chemosensors," <i>J. Am. Chem. Soc.</i> , <b>125</b> :3420, (March 2003)  |  |  |
|  |  | Zhang, S. et al., Supplemental Information at <a href="http://pubs.acs.org/subscribe/journals/jacsat/supinfo/-ja029265z/ja029265zsi20030125_030500.pdf">http://pubs.acs.org/subscribe/journals/jacsat/supinfo/-ja029265z/ja029265zsi20030125_030500.pdf</a> (March 2003) |  |  |
|  |  | "Institute for Soldier Nanotechnologies," slides ( <a href="http://web.mit.edu/isn/industryday/index/html">http://web.mit.edu/isn/industryday/index/html</a> )   |  |  |
|  |  | International Search Report for International Application Serial No. PCT/US2002/38321 (published as International Publication No. WO 2003/048226), issued by the ISA on December 12, 2003  |  |  |

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